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Alexandria VA 22313-1450

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of:

Matsuoka, et al.

Application No.: Not Assigned

Filed: November 14, 2003

For: C3 Plants Expressing Photosynthetic  
Enzyme of C4 Plants

Examiner: Not Assigned

Art Unit: Not Assigned

INFORMATION DISCLOSURE  
STATEMENT UNDER 37 CFR §1.97 and  
§1.98

Mail Stop: Patent Application  
Commissioner for Patents  
P.O. Box 1450  
Alexandria VA 22313-1450

Sir:

The references cited on attached forms PTO-1449 and SB08B are being called to the attention of the Examiner. In accordance with 37 CFR §1.98(d), copies of the references on the PTO Form 1449 filed 04/23/98, the Form 1449 filed 12/10/98, and the form SB08B filed 02/14/02 can be found in Application No. **09/003,072**, filed 01/05/98 (Attorney Docket No. 085761-000000US). It is respectfully requested that the cited references be expressly considered during the prosecution of this application, and the references be made of record therein and appear among the "references cited" on any patent to issue therefrom.

As provided for by 37 CFR 1.97(g) and (h), no inference should be made that the information and references cited are prior art merely because they are in this statement and

no representation is being made that a search has been conducted or that this statement encompasses all the possible relevant information.

Applicant believes that no fee is required for submission of this statement, since it is being submitted prior to the first Office Action. However, if a fee is required, the Commissioner is authorized to deduct such fee from the undersigned's Deposit Account No. 20-1430. Please deduct any additional fees from, or credit any overpayment to, the above-noted Deposit Account.

Respectfully submitted,



Matthew E. Hinsch  
Reg. No. 47,651

TOWNSEND and TOWNSEND and CREW LLP  
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Attorney Docket No.: 085761-000000US  
Client Reference No.: AR002US

Attn: Group Director  
Assistant Commissioner for Patents  
Washington, D.C. 20231

On February 14, 2002

TOWNSEND and TOWNSEND and CREW LLP

By: Kathryn A. Degliantoni

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of:

Matsuoka, et al.

Application No.: 09/003,072

Filed: January 5, 1998

For: C3 PLANTS EXPRESSING  
PHOTOSYNTHETIC ENZYME OF C4  
PLANTS

Examiner: Zaghmout, Ousama

Art Unit: 1649

SUPPLEMENTAL INFORMATION  
DISCLOSURE STATEMENT UNDER 37  
CFR §1.97(i) and §1.98

Attn: Group Director  
Assistant Commissioner for Patents  
Washington, D.C. 20231


Sir:

The references cited on attached form PTO/SB/08B are being called to the attention of the Examiner. Copies of the references are enclosed. As provided for by 37 CFR 1.97(i), it is respectfully requested that the cited references be placed in the file.

As provided for by 37 CFR 1.97(g) and (h), no inference should be made that the information and references cited are prior art merely because they are in this statement and no representation is being made that a search has been conducted or that this statement encompasses all the possible relevant information.

This IDS is being filed after the mailing date of the final Office Action or Notice of Allowance. Please deduct \$180.00, pursuant to 37 CFR §1.17(i), from the undersigned's Deposit Account No. 20-1430. Please deduct any additional fees from, or credit any overpayment to, the above-noted Deposit Account.

Respectfully submitted,

  
Peter Seperack  
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PATENT  
Attorney Docket No.: 85761-0  
Client Reference No.: AR002US

Assistant Commissioner for Patents  
Washington, D.C. 20231

On 12/10/98

TOWNSEND and TOWNSEND and CREW LLP

By: [Signature]

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of:

Matsuoka et al.

Application No.: 09/003,072

Filed: January 5, 1998

For: C3 PLANTS EXPRESSING  
PHOTOSYNTHETIC ENZYME OF C4  
PLANTS

Examiner: Zaghmout, Ousama

Art Unit: 1649

SUPPLEMENTAL INFORMATION  
DISCLOSURE STATEMENT UNDER 37  
CFR §1.97 and §1.98

Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:


The references cited on attached form PTO-1449 are being called to the attention of the Examiner. Copies of the references are enclosed. Also enclosed is a copy of the Search/Examination report corresponding to the European application. It is respectfully requested that the cited information be expressly considered during the prosecution of this application, and the references be made of record therein and appear among the "references cited" on any patent to issue therefrom.

As provided for by 37 CFR 1.97(g) and (h), no inference should be made that the information and references cited are prior art merely because they are in this statement and

no representation is being made that a search has been conducted or that this statement encompasses all the possible relevant information.

Applicant believes that no fee is required for submission of this statement, since it is being submitted prior to the first Office Action on the merits. However, if a fee is required, the Commissioner is authorized to deduct such fee from the undersigned's Deposit Account No. 20-1430. Please deduct any additional fees from, or credit any overpayment to, the above-noted Deposit Account.

Respectfully submitted,

  
Kevin Bastian  
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SF 182402 v1

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PATENT

April 23, 1998

Attorney Docket No. 85761

TOWNSEND and TOWNSEND and CREW LLP

By Timothy S. Parker

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:	)	
MAKOTO MATSUOKA, et al.	)	Examiner: Unassigned
Application No.: 09/003,072	)	Art Unit: 1649
Filed: January 5, 1998	)	INFORMATION DISCLOSURE
For: C3 PLANTS EXPRESSING	)	STATEMENT UNDER
PHOTOSYNTHETIC ENZYME OF C4)	)	<u>37 CFR §1.97 and §1.98</u>
PLANTS	)	

Assistant Commissioner for Patents  
Washington, D.C. 20231

Sir:

The references cited on attached form PTO-1449 are being called to the attention of the Examiner. A copy of each is enclosed.

It is respectfully requested that the cited information be expressly considered during the prosecution of this application, and the references be made of record therein and appear among the "references cited" on any patent to issue therefrom.

Applicant believes that no fee is required for submission of this statement, since it is being submitted prior to the first Office Action. However, if a fee is required, the

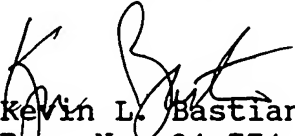
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MAKOTO MATSUOKA, et al.  
Application No.: 09/003,072  
Page 2

PATENT

Commissioner is authorized to charge such fee to Deposit Account No. 20-1430. Please charge any additional fees or credit any overpayment to the above-noted Deposit Account.

Respectfully submitted,

  
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PTO/SB/08B (08-00)

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Substitute for form 1449B/PTO

## INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(use as many sheets as necessary)

Sheet

1

of

### Complete If Known

Application Number	09/003,072
Filing Date	January 5, 1998
First Named Inventor	Matsuoka
Group Art Unit	1649
Examiner Name	Zaghmout, Ousama
Attorney Docket Number	085761-000000US

### U.S. PATENT DOCUMENTS

Examiner Initials *	Cite No. <sup>1</sup>	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number	Kind Code <sup>2</sup> (if known)			
	AA					
	AB					

### FOREIGN PATENT DOCUMENTS

Examiner Initials *	Cite No. <sup>1</sup>	Foreign Patent Document			Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T <sup>3</sup>
		Office <sup>3</sup>	Number <sup>4</sup>	Kind Code <sup>5</sup> (if known)				
	AC	Europe	0 723 012	A1	Japan Tobacco Inc.	07-24-1996		
	AD							

### OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS

Examiner Initials *	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
	AE	Hatch, M.D., "Photosynthesis: The Path of Carbon," <i>Plant Biochemistry</i> , Third Ed., Academic Press, Ch. 24, pp. 797 and 809-818 (1976)	
	AF	Burnell, et al., "Photosynthesis in Phosphoenolpyruvate Carboxykinase-Type C <sub>4</sub> Plants: Photosynthetic Activities of Isolated Bundle Sheath Cells," <i>Archives of Biochemistry and Biophysics</i> , 260(1):177-186 (January 1988)	
	AG	Matsuoka, et al., "Expression of photosynthetic genes from the C <sub>4</sub> plant, maize, in tobacco," <i>Mol. Gen. Genet.</i> , 225:411-419 (1991)	
	AH	Matsuoka, et al., "Tissue-specific light-regulated expression directed by the promoter of a C <sub>4</sub> gene, maize pyruvate, orthophosphate dikinase, in a C <sub>3</sub> plant, rice," <i>Proc. Natl. Acad. Sci. USA</i> , 90:9586-9590, (October 1993)	
	AI	Matsuoka, et al., "The promoters of two carboxylases in a C <sub>4</sub> plant (maize) direct cell-specific, light-regulated expression in a C <sub>3</sub> plant (rice)," <i>The Plant Journal</i> , 6(3):311-319 (1994)	
	AJ	Matsuoka, et al., "Molecular Engineering of C <sub>4</sub> Photosynthesis," <i>Annu. Rev. Plant Physiol. Plant Mol. Biol.</i> , 52:297-314 (2001)	

Examiner  
Signature

Date  
Considered

<sup>1</sup> EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>2</sup> Unique citation designation number. <sup>3</sup> Applicant is to place a check mark here if English language Translation is attached.

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SF 1317556 v1

FORM PTO-1449 (Modified)			Attorney Docket No.:		Application No.: 09/003,072	
LIST OF PATENTS AND PUBLICATIONS FOR APPLICANT'S INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)			Applicant: Matsuoka et al.			
			Filing Date: January 5, 1998		Group: 1649	
Reference Designation			U.S. PATENT DOCUMENTS			Page 1
Examiner Initial	Document No.	Date	Name	Class	Sub-class	Filing Date (If Appropriate)
___ AA						
___ AB						
___ AC						
___ AD						
___ AE						
___ AF						
___ AG						
___ AH						
___ AI						
___ AJ						
___ AK						
___ AL						
___ AM						
___ AN						
___ AO						
___ AP						
FOREIGN PATENT DOCUMENTS						
	Document No.	Date	Country	Class	Sub-class	Translation (Yes/No)
___ AQ	WO96/01895	Jan. 25, 1996	Japan	C12N	15/00, 9/88	No
___ AR	WO95/11979	May 4, 1995	Japan	C12N	15/60	No
___ AS	9-65886	1997	Japan	C12N	15/09	No
___ AT	DE 195 31 783 A1	March 6, 1997	Germany	C12N	15/82	No
___ AU						
___ AV						
OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)						
___ AW	XP-002074176, Abstract, 1567, Session 62. Transgenics and Biotechnology					
___ AX	Patent Abstracts of Japan, Publication Number 01086822, publication date March 31, 1989, Application Number 62242610, filed September 29, 1987, Okabe Keiichiro, "Breeding Plants with Suppressed Photorespiration." international class A01H, 1/00:C12N 5/00.					
___ AY	Patent Abstracts of Japan, Publication Number 07184657, publication date July 25, 1995, Application Number 05335671, filed December 28, 1993; Ishihara Ho, "C4 Photosynthesis-related gene in rice plant and its promoter", pp. 1-26.					
___ AZ	XP-002072320, The Plant Journal (1994) 6(3), pp. 311-319, M. Matsuoka et al., "The promoters of two carboxylases in a C4 plant (maize) direct cell-specific, light-regulated expression in a C3 plant (rice)."					
___ BA	XP-002074175, "Expression of Photosynthetic Genes from C4 Plant in C3 Plants," Matsuoka and Kano-Murakami, N. Murata (ed.), Research in Photosynthesis, Vol. III, pp. 879-882.					
___ BB	XP-002072322, Abstract, JO9065886, "Phospho Enol Pyruvate Carboxy Kinase Gene Photosynthesis Plant useful to Improve Photosynthesis in Plants.					



FORM PTO-1449 (Modified)		Attorney Docket No. 85761		Serial No.: 09/003,072	
LIST OF PATENTS AND PUBLICATIONS FOR APPLICANT'S INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)		Applicant: MAKOTO MATSUOKA, et al.			
		Filing Date: January 5, 1998		Group: 1649	
Reference Designation		U.S. PATENT DOCUMENTS			
Examiner Initial	Document No.	Date	Name	Class	Filing Date (If Appropriate)
___ AA					
FOREIGN PATENT DOCUMENTS					
	Document No.	Date	Country	Class	Translation (yes/no)
___ AB					
OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)					
___ AC	Kogami, Hiroyuki, et al. (1994) "Molecular and physiological evaluation of transgenic tobacco plants expressing a maize phosphoenolpyruvate carboxylase gene under the control of the cauliflower mosaic virus 35S promoter", <i>Transgenic Research</i> 3, 287-296				
___ AD	Ku, Maurice S. B., et al. (1996) "Evolution and Expression of C <sub>4</sub> Photosynthesis Genes", <i>Plant Physiol.</i> 111:949-957				
___ AE	Hudspeth, Richard L., et al. (1992) "Expression of Maize Phosphoenolpyruvate Carboxylase in Transgenic Tobacco", <i>Plant Physiol.</i> 98:458-464				
___ AF	Matsuoka, Makoto, et al. (1989) "Complete structure of the gene for phosphoenolpyruvate carboxylase from maize", <i>Eur. J. Biochem.</i> 181:593-598				
___ AG	Matsuoka, Makoto, et al. (1990) "Structure, Genetic Mapping, and Expression of the Gene for Pyruvate, Orthophosphate Dikinase from Maize", <i>The Journal of Biological Chemistry</i> , 265(28):16772-16777				
___ AH	Rothermel, Beverly A., et al. (1989) "Primary Structure of the Maize NADP-dependent Malic Enzyme", <i>The Journal of Biological Chemistry</i> , 264(33):19587-19592				
___ AI	Nagel, R., et al. (1990) "Electroporation of binary Ti plasmid vector into <i>Agrobacterium tumefaciens</i> and <i>Agrobacterium rhizogenes</i> ", <i>FEMS Microbiology Letters</i> , 67:325-238				
___ AJ	Matsuoka, Makoto, et al. (1987) "Classification and Structural Comparison of Full-Length cDNAs for Pathogenesis-Related Proteins", <i>Plant Physiol.</i> 85:942-946				
___ AK	Matsuoka, Makoto, et al. (1989) "Induction of mRNAs for Phosphoenolpyruvate Carboxylase and Pyruvate, Orthophosphate Dikinase in Leaves of a C <sub>3</sub> Plant Exposed to Light", <i>Plant Cell Physiol.</i> 30(4):479-486				
___ AL	Jefferson, Richard A., et al. "GUS fusions: $\beta$ -glucuronidase as a sensitive and versatile gene fusion marker in higher plants", <i>The EMBO Journal</i> , 6(13):3901-3907				
___ AM	Ohta, Shozo, et al. (1990) "Construction and Expression in Tobacco of a $\beta$ -Glucuronidase (GUS) Report Gene Containing an Intron Within the Coding Sequence", <i>Plant Cell Physiol.</i> 31(6):805-813				
___ AN	Chilton, Mary-Dell, et al. (1974) "Agrobacterium tumefaciens DNA and PS8 Bacteriophage DNA Not Detected in Crown Gall Tumors", <i>Proc. Nat. Acad. Sci USA</i> , 71(9):3672-3676				
___ AO	Hiei, Yukoh, et al. (1994) "Efficient transformation of rice ( <i>Oryza sativa</i> L.) mediated by <i>Agrobacterium</i> and sequence analysis of the boundaries of the T-DNA", <i>The Plant Journal</i> 6(2):271-282				

FORM PTO-1449 (Modified)		Attorney Docket No. 85761	Serial No.: 09/003,072
LIST OF PATENTS AND PUBLICATIONS FOR APPLICANT'S INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)		Applicant: MAKOTO MATSUOKA, et al.	
		Filing Date: January 5, 1998	Group: 1649
___ AP	Edwards, Gerald E., et al. (1988) "C <sub>4</sub> Photosynthesis: Activities of Photosynthetic Enzymes in a Virescent Mutant of Maize Having a Low-temperature-induced Chloroplast Ribosome Deficiency", <i>Aust. J. Plant Physiol</i> , 15:385-395		
___ AQ	Matsuoka, Makoto (1995) "The Gene for Pyruvate, Orthophosphate Dikinase in C <sub>4</sub> Plants: Structure, Regulation and Evolution", <i>Plant Cell Physiol</i> , 36(6):937-943		
___ AR	Gehlen, Johanna, et al. (1996) "Effects of altered phosphoenolpyruvate carboxylase activities on transgenic C <sub>3</sub> plant <i>Solanum tuberosum</i> ", <i>Plant Molecular Biology</i> 32:831-848		
EXAMINER		DATE CONSIDERED	

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